



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,437	04/24/2001	George Leo Stegemeier	5659-08100/EBM	5260

7590 06/05/2003

DEL CHRISTENSEN  
SHELL OIL COMPANY  
P.O. BOX 2463  
HOUSTON, TX 77252-2463

EXAMINER

SUCHFIELD, GEORGE A

ART UNIT

PAPER NUMBER

3672

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/841,437

Applicant(s)

STEGEMEIER ET AL

Examiner

George Suchfield

Art Unit

3672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 531-556, 558-610, 623-625, 665-706, 5396-5398 and 5400-5440 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 531-534, 537-556, 558-575, 578-609, 5396 and 5397 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) See Continuation Sheet are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 May 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 20-23. 6) ☐ Other: \_\_\_\_\_

Continuation of Disposition of Claims: Claims withdrawn from consideration are 535,536,576,577,610,623-625,665-706,5398 and 5404-5440.

Continuation of Disposition of Claims: Claims subject to restriction and/or election requirement are 531-610,623-625,665-706,5396-5398 and 5400.

Art Unit: 3672

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 5399 (second occurrence) and 5400-5439 been renumbered 5400-5440.

2. Newly submitted claims 5404-5440 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

New claims 5404-5411, by virtue of being dependent upon claims 610, 623, 665 and 704, fall within the none-elected species B-E, as set forth in the election requirement dated November 15, 2002 (Paper No. 16).

New claims 5412-5440 are directed to a new species altogether, as set forth in Para 5) of the said election requirement, comprising:

E'. A method of heating a coal formation wherein the %Fischer Assay of the produced mixture is greater than about 60% by controlling the average pressure and temperature in the formation based on an exemplary pressure/temperature relationship or formula, as recited.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 5404-5440 stand withdrawn from consideration as being directed to a non-elected invention, along with claims 535, 536, 576, 577, 610, 623-625, 665-706 and 5398, previously withdrawn. See 37 CFR 1.142(b) and MPEP § 821.03.

Art Unit: 3672

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 531-556, 558-609, 5396, 5397 and 5400-5403 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over copending applications (including the present application):

09/840,936; 09/840,937; 09/841,000; 09/841,060; 09/841,061; 09/841,127; 09/841,128; 09/841,129; 09/841,130; 09/841,131; 09/841,170; 09/841,193; 09/841,194; 09/841,195; 09/841,238; 09/841,239; 09/841,240; 09/841,283; 09/841,284; 09/841,285; 09/841,286; 09/841,287; 09/841,288; 09/841,289; 09/841,290; 09/841,291; 09/841,292; 09/841,293; 09/841,294; 09/841,295; 09/841,296; 09/841,297; 09/841,298; 09/841,299; 09/841,300; 09/841,301; 09/841,302; 09/841,303; 09/841,304; 09/841,305; 09/841,306; 09/841,307; 09/841,308; 09/841,309; 09/841,310; 09/841,311; 09/841,312; 09/841,429; 09/841,430; 09/841,431; 09/841,432; 09/841,433; 09/841,434; 09/841,435; 09/841,436; 09/841,437; 09/841,438; 09/841,439; 09/841,440; 09/841,441; 09/841,442; 09/841,443; 09/841,444; 09/841,445; 09/841,446; 09/841,447; 09/841,448; 09/841,449; 09/841,488; 09/841,489; 09/841,490; 09/841,491; 09/841,492; 09/841,493; 09/841,494; 09/841,495; 09/841,496; 09/841,497; 09/841,498; 09/841,499; 09/841,500; 09/841,501; 09/841,502; 09/841,632; 09/841,633; 09/841,634; 09/841,635; 09/841,636; 09/841,637; 09/841,638; and 09/841,639.

Claims 531-556, 558-609, 5396, 5397 and 5400-5403 are specifically provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being

Art Unit: 3672

unpatentable over claims 531-609 of copending Application No. 09/841,430. Although the conflicting claims are not identical, they are not patentably distinct from each other because the hydrocarbon-containing formation treated by the method of claim 531 and 570 of this pending application is deemed broad enough to encompass or comprise the coal formation of claim 531 and 570 of the copending application. Otherwise, the remaining claims of both this and the copending application appear to correspond, with the additional limitation in claims 5396 and 5397 to 20 heat sources per recovery well deemed an obvious matter of choice or design based on, e.g., the characteristics, properties and/or areal extent of particular hydrocarbon formation encountered in the field.

Claims 532-556, 558-569, 571-609, 5396, 5397 and 5400-5403 appear to essentially correspond to claims 532-569 and 571-609 of the copending '430 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

6. Claims 531, 533, 534, 542-553, 555, 556, and 564-566 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Elkins (2,734,579).

Elkins discloses a process of heating a hydrocarbon formation comprising a bituminous deposit, such as tar sands, utilizing one or more heaters, such as an electrical heater (note col. 2, lines 24-68). Production effluent is obtained from the formation which comprises a mixture of liquid hydrocarbons and gaseous products of combustion. During part of the heating process, the temperature in the formation is clearly controlled "as a function of pressure", as called for in

Art Unit: 3672

claim 531, specifically, the temperature is controlled as a function of the injection gas pressure (col. 3, lines 13-47). Further regarding claim 531, Elkins (col. 2, lines 10-23) discloses that during the process, the injected gas pressure is maintained between 250-500 psi, or higher. Such pressure range is deemed to inherently or obviously encompass the recited range of “at least about 2.0 bar absolute”, with any difference therebetween deemed an obvious matter of choice or design based on, e.g., routine experimentation for economic feasibility, the quality and type of the tar sands or solid bituminous material present and/or the matrix characteristics of the particular bituminous formation encountered in the field.

Elkins maintains the temperature during the in situ combustion phase of the heating process within a temperature range of 400-1,200°F, which corresponds to a temperature range of 204-648°C. Such temperature range encompasses the recited temperature range in claim 533 of 270-400°C, with any difference therebetween deemed an obvious matter of choice or design based on, e.g., the characteristics or type of the particular tar sands formation encountered in the field.

Regarding claims 542-553, 555 and 556, it is deemed that the myriad hydrocarbon product mixtures recited in these claims would necessarily or obviously occur in carrying out the heating process of Elkins, i.e., the precise composition of the product fluids is seen as dictated by the type of tar sands naturally occurring in the particular bituminous hydrocarbon formation actually encountered in the field. Moreover, it would be an obvious matter of choice to operate the Elkins process to minimize what would be considered refinery contaminants, such as sulfur, nitrogen and/or oxygen in the product mixtures. Similarly, it would be obvious to reduce or minimize the amount of asphaltenes in the product mixtures for optimum downstream refining.

Art Unit: 3672

Also, in the event that the particular tar sands deposit encountered yields ammonia gas, it would be an obvious expedient to utilize it in a commercial process such as fertilizer production.

The heating process of Elkins also causes an increase in permeability of the hydrocarbon formation (note col. 2, line 69 - col. 3, line 8). It is further deemed that such permeability increase will inherently or obviously be substantially uniform, as called for in claim 565, e.g., during an overall field heating process. Such permeability increase is deemed to necessarily or inherently encompass an increase to “greater than about 100 millidarcy”, as called for in claim 564; alternatively, to increase the permeability to greater than 100 millidarcy would have been an obvious matter of choice in order to ensure adequate fluid flow through the formation.

As per claim 566, Elkins (col. 2, lines 69-71) indicates that the region of the tar sands formation in which both the heater and in situ combustion phases have been carried out “is completely cleaned of all hydrocarbon and water content”. Accordingly, it is deemed that greater than 60% by weight of the Fischer Assay hydrocarbons will inherently or obviously be recovered, as called for in claim 566.

7. Claims 539 and 541 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elkins (2,734,579).

The precise heating rate recited in claim 539 is deemed obvious matters of choice or design during the phase of the process of Elkins (col. 2, lines 24-68) deploying the well heater(s) based on, e.g., routine experimentation for economic feasibility and/or the characteristics or type of the particular tar sands formation encountered in the field.

Art Unit: 3672

Similarly, the thermal conductivity recited in claim 541 is deemed an obvious matter of choice or design based on, e.g., the quality and type of the tar sands or solid bituminous material present and/or the matrix characteristics of the particular formation encountered in the field.

8. Claims 568 and 569 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elkins (2,734,579), as applied to claim 531 above, and further in view of Salomonsson (2,914,309) or Camacho et al (4,067,390).

It would have been obvious to one of ordinary skill in the art to which the invention pertains to deploy a plurality of heating/injection and production wells in the process of Elkins and further provide or lay out the wells in a triangle, and/or repeating triangle pattern, as disclosed by Salomonsson (note Figure 3 and col. 3, lines 5-34) or Camacho et al (note Figure 8), in order to apply the overall heating/pyrolysis effected by the Elkins process over the entire areal extent of the bituminous or tar sands formation, as actually encountered in the field.

9. Applicant's arguments filed with the amendment have been fully considered but they are not persuasive.

Applicant argues that Elkins' 579 fails to control or maintain the pressure "in at least a majority of the part of the formation" to "at least about 2.0 bars absolute", as called for in claim 531. Such argument(s), however is not deemed persuasive. Elkins (note col. 2, line 10 – col. 3, line 47) initially heats, and evolves a hydrocarbon product mixture within, a region of the formation extending from "the surface of the deposit" to an area around the well out to "approximately ten feet in diameter". Such region of the formation is deemed to comprise "a part of the formation", as called for in claim 531. Such formation region or "part" is initially heated by a heater, such as an electric heater, followed by, and/or in conjunction with, injection

Art Unit: 3672

of air to support in situ combustion. As noted above in the rejection, the temperature within such region is controlled as a function of the gas or air injection pressure. Insofar as this region or part of the formation only extends out to ten feet from the well, it is still deemed that an injection pressure of as high as 250-500 psi "or higher" (col. 2, lines 10-23) will necessarily or obviously result in a pressure of "at least about 2.0 bars absolute". Moreover, it is deemed that Elkins indicates heating is only effected "after gas permeability is secured", hence the high pressure injection gas or air would appear to quickly pressurize said region or "part" of the formation within ten feet from the well to 2.0 bar, which would only comprise around 30 psi, well below the injection pressure of 250-500 psi.

Contrary to applicant's arguments regarding claims 542-553, 555 and 556, it is deemed that Elkins similarly controls and modifies formation conditions during treatment in the same manner as applicant, i.e., Elkins controls both the temperature and the pressure, and which are functionally related. Accordingly, it is deemed that Elkins will evolve similar hydrocarbon product mixture(s) from the formation. In fact, throughout the process of Elkins, a wide range of hydrocarbon products are produced, including liquid oil, products of combustion, "cracked and distilled", "liquefied in place" bitumen (noted col. 2, lines 46-69). Thus it is deemed that the hydrocarbon products or mixtures recited in these claims will necessarily or obviously fall within or be encompassed by the wide range of hydrocarbon products produced by Elkins, with most specific production effluent composition(s) seen dictated in large measure by the characteristics and properties of a particular tar sands formation encountered in the field.

With regard to applicant's argument traversing the rejection of claim 566, as noted previously and acknowledged by applicant, Elkins discloses that the tar sands formation will be

Art Unit: 3672

“completely cleaned of all hydrocarbon content”. Thus, it would appear that 100% of the Fischer Assay hydrocarbons are recovered. Furthermore, except for the “products of combustion”, all the other hydrocarbon products produced and/or recovered appear to comprise “condensable hydrocarbons”, such as the referred to liquid oil, “cracked and distilled”, “liquefied in place” bitumen (noted col. 2, lines 46-69). Elkins (col. 3, line 65- col. 4, line 33) even more specifically indicates recovery of “70 to 90 per cent of the hydrocarbons in the deposit, having an average gravity of 19o A.P.I.”, as a result of control of the heating process. Accordingly, clearly in excess of 60% of the original formation hydrocarbons are recovered in the form of condensable hydrocarbons.

With regard to claim 539, at least in the initial stage of the heating of the “part” of the formation extending from “the surface of the deposit” to an area around the well out to “approximately ten feet in diameter”, as noted above, when the only heating is provided by a heater, such as an electric heater, it is deemed the heating rate will be similar to applicant’s heating rate, since, at that point, applicant employs similar heater(s) as Elkins.

Similarly with regard to claim 541, since during the initial stage of heating in the process of Elkins, the part or portion of the formation is heated in the same manner as per applicant’s invention, i.e., using a heater, such as an electric heater, it is deemed the hydrocarbon or tar sands formation will be affected in the same manner as per applicant’s invention, experiencing an increase in thermal conductivity to “greater than about 0.5 W/(moC)”. It is further noted that the claim(s) is not limited to a coal formation, as referred to in applicant’s arguments in section “G”.

10. It is noted that claims 532, 537, 538, 540, 554, 558, 559-563, 567, 570-609, 5396, 5397 and 5400-5403 have been rejected only on the grounds of double patenting .

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Suchfield whose telephone number is 703-308-2152. The examiner can normally be reached on M-F (6:30 - 3:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on 703-308-2151. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Art Unit: 3672

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

  
George Suchfield  
Primary Examiner  
Art Unit 3672

gs  
June 4, 2003